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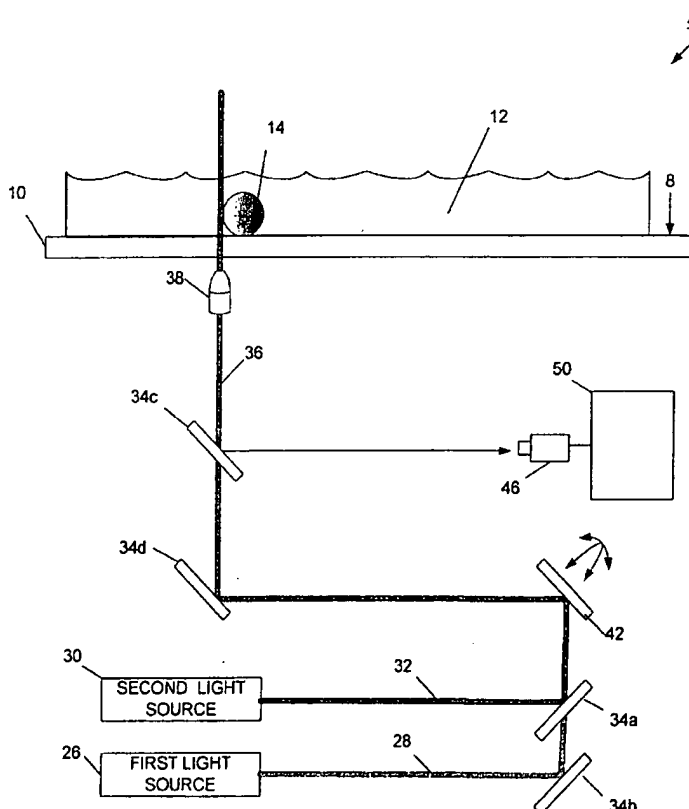
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(54) Title: APPARATUS AND METHOD OF MOVING MICRO-DROPLETS USING LASER-INDUCED THERMAL GRADIENTS



(57) Abstract: Described are an apparatus  
(4) and method of moving micro-droplets.  
A surface (8) has a liquid phase (12) thereon.  
In the liquid phase is a droplet (14). Focused  
at an edge of the droplet is a beam of light  
(28). The light beam produces a thermal  
gradient sufficient to induce the droplet (14)  
to move according to the Marangoni effect.  
The movement-inducing thermal gradient may  
appear within the droplet or within the liquid  
phase. The composition of the droplet, the  
liquid phase, and wavelength of the light beam  
can cooperate to cause heating within the  
droplet, liquid phase, or both. For example,  
an infrared laser can cause vibration of an  
O-H stretch in an aqueous droplet (or in the  
liquid phase). As another example, adding  
dye to a droplet or to the liquid phase enables  
absorption of light from an Argon ion laser.  
The apparatus and method find particular use  
in biological and chemical high-throughput  
assays.



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